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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,796	10/12/2001	Kennard K. Addis	PA0457DGA01	2441

7590

06/06/2003

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EXAMINER

ANDERSON, MATTHEW A

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 06/06/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,796

Applicant(s)

ADDIS, KENNARD K.

Examiner

Matthew A. Anderson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitoshi et al. (JP-61044792).

Hitoshi et al. discloses an apparatus used in Cz pulling of semiconductor ingots comprising a quartz crucible for containing Si melt placed within a carbon (i.e. graphite) crucible (i.e. susceptor). A through hole is formed in the sidewall of the quartz crucible above the melt. This hole is formed to the carbon crucible and it allows SiO gas to escape and thus prevents dislocations at the ingot growth interface.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3,4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitoshi et al. as applied to claims 1,2 above, and further in view of Fukada et al. (JP 406157186 A).

Hitoshi et al. is described above.

Hitoshi et al. does not disclose a protective coating on the graphite susceptor.

Fukada et al. discloses an coating layer applied to graphite susceptors used in the Cz method. The layer is described as preventing crazing (i.e. surface material loss) thus improving the process. One of the oxidation resistant materials suggested as the coating is SiC in col. 3 lines 27-31.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine Taguchi et al. with the Fukada et al. because the SiC coating of Fukada et al. was described as preventing crazing of the susceptor and thus reducing costs for the process. Additionally, less dust from crazing would be present and so less possibility for dislocations from that dust.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to coat the graphite susceptor with SiC because Fukada et al suggests such a coating will prevent graphite crazing.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hitoshi et al. as applied to claims 1,2 above, and further in view of Wegmeth et al. (US 5,372,090).

Hitoshi et al. is described above.

Hitoshi et al. does not disclose the vertical orientation of the ventilation holes.

Wegmeth discloses a support crucible (i.e. susceptor) of graphite (i.e. carbon) made in sections as in Figs. 2 and 3. A gap exists vertically at least along a portion of the susceptor as shown in Fig. 3 .

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the Wegmeth split susceptor with the apparatus of Hitoshi et al. because then the quartz crucible would not be crushed during the cooling of the apparatus because of differential cooling of the quartz versus the graphite. (See Wegmeth et al. col. 1 line 55+ and col. 2 lines 1-5.)

It would have been obvious to one of ordinary skill in the art at the time of the present invention to vertically orient the holes along at least a portion of the susceptor because Wegmeth et al. suggests such a spacing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone number is (703) 308-0086. The examiner can normally be reached on M-Th, 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MAA
June 2, 2003

Matthew Anderson
A. U. 1765